

$$\begin{aligned}
V_x(Y+dY) = & \exp \left\{ -i \frac{\sqrt{\alpha_s dY}}{\pi} \int_z \vec{K}_{x-z}^{\text{mod}} \cdot (V_z \vec{\xi}_z V_z^\dagger) \right\} \\
& \times V_x(Y) \exp \left\{ i \frac{\sqrt{\alpha_s dY}}{\pi} \int_z \vec{K}_{x-z}^{\text{mod}} \cdot \vec{\xi}_z \right\}
\end{aligned}$$